Two-Dimensional Vibration Suppression In Machining A Smooth Surface With Uniform Cross Section And Zero Modulation

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Summary

The integrity and behavior of a control process for isolating a cutter from machine tool vibration, which is transmitted to it through an elastic base in both the radial and feed directions, is tested. The control is tested using actual cutting data published in literature about metal removal processes. This research paper presents simulation results and effectiveness of the proposed control strategy when machining a smooth surface with uniform cross section and zero modulation. The control process was able to reduce the tool's displacements and accelerations by 20-30%, which is significant and implies considerable improvement to surface roughness and waviness.